

**BY ORDER OF THE COMMANDER
US AIR FORCES IN EUROPE**

**UNITED STATES AIR FORCES IN EUROPE
INSTRUCTION 32-7040**



6 MARCH 2013

Civil Engineering

**AIR CONDITIONING (AC) UTILIZATION
PROCEDURES AND GUIDANCE**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This publication implements Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities*. This instruction outlines the procedures, responsibilities, and guidance for the use of Air Conditioning (AC) in the USAFE Command. It applies to Base Civil Engineers (BCEs) involved in maintaining, installing, and replacing AC systems. This instruction was developed to clearly define requirements and guidelines contained in UFC 3-410-01, *Heating, Ventilation, and Air Conditioning Systems* and how it applies to USAFE installations. Refer recommended changes and questions about this instruction to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. All correspondence should be routed through and answered at the appropriate level of the functional chain of command. Ensure that all records created as a result of processes prescribed in this instruction are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). This instruction does not apply to the Air National Guard (ANG) and the Air Force Reserve Command (AFRC) and their units.

1. Background: HQ USAFE/A7NO periodically conducts site visits of installations throughout USAFE to evaluate infrastructure systems and programs. The results of these site visits are documented in the Structures, Utilities & Pavements Evaluation Report (SUPER) for each installation. Recent site visits have identified a large number of AC systems that provide “comfort cooling” and are not authorized according to guidelines set by the Command. Unauthorized “comfort cooling” systems create three issues: (1) unnecessary electrical consumption/costs, (2) excessive mechanical equipment/refrigerant inventory, (3) significant use of time/funds on maintenance/repairs. Reducing the number of unauthorized AC systems saves precious utility dollars and assists the Command achieve its required annual energy intensity reduction. In addition, eliminating unauthorized AC systems reduces the amount of equipment and refrigerant that is required to be maintained and tracked. Finally, removing unauthorized AC systems allows the Civil Engineer Squadron (CES) to focus their time, efforts, and funds on authorized AC systems to ensure optimal performance and energy efficiency. While challenges exist in balancing energy conservation with quality of life and customer satisfaction, base organizations must support federally mandated energy reduction goals while conserving taxpayer dollars.

2. Primary Definitions:

2.1. **Comfort Cooling** – is the effort to reduce the temperature and/or humidity levels for the purpose of human comfort. USAFE installations that do not meet the temperature requirements identified on Attachment 4 are **not** authorized comfort cooling. The official source for weather data to determine comfort cooling eligibility is the 14th Weather Squadron Climate Services. Updated weather information can be found at www.afccc.af.mil. See Attachments 4, 5, and 6 for information on comfort cooling temperature requirements, weather data, and USAFE facilities that are authorized comfort cooling based on these guidelines.

2.2. **Equipment Cooling** – is the effort to reduce the temperature and/or humidity levels for the purpose of cooling specialized equipment or electronics IAW manufacturer’s specifications, a technical order (TO), or other appropriate published document. To the most extent possible, this equipment should be separated so that cooling is not inadvertently provided to an unauthorized area. This allows the AC system to be sized properly by providing cooling only to the area required.

2.3. **Ventilation** – is the process of introducing fresh air into a facility to provide higher indoor air quality.

2.4. **Natural Ventilation** – is the process of using windows or other non-mechanical methods to introduce fresh air into a facility.

2.5. **Mechanical Ventilation** – is the process of using mechanical equipment such as an air handler to introduce fresh air into a facility or an exhaust fan to withdrawal stale air from a facility.

2.6. **Free Cooling** – an economical method of using outside air to provide cooling. This is usually performed in the evening and early morning hours when the outside temperatures are lower, reducing or eliminating the need to operate the facilities AC system, thereby reducing overall energy consumption.

2.7. **Traditional Mechanical Cooling (TMC) System** – a mechanical system that uses a compressor and a refrigeration cycle to provide cooling to the desired space. The most common forms of TMC systems found on Air Force installations include: *chillers, package units, split systems, air to air heat pumps, and window units.*

2.8. **Non-Traditional Mechanical Cooling (Non-TMC) System** – a mechanical system that uses a compressor and a refrigeration cycle to provide cooling to the desired space. However, the method of heat transfer and other design efficiencies differentiate a Non-TMC system from a TMC system. Non-TMC systems include: *ground and/or water source heat pumps and free cooling chillers.*

2.9. **Alternative Cooling Methods** – a way to achieve the desired cooling effect without the use of a TMC or Non-TMC system. Some examples are: *window tinting, blinds, shade trees, additional insulation to reduce heat gain/loss, selective de-lamping, and the use of a ventilation system to utilize free cooling.* USAFE organizations should consider alternative cooling methods first as a way to maintain the required temperature as these methods consume the least amount of energy and have the lowest operating and maintenance costs. In addition, units should continually look for new energy-saving practices and are encouraged to incorporate multiple sustainable design technologies appropriate for each specific location and climate. Additional information on energy efficient cooling methods can be found in **FEDERAL ENERGY MANAGEMENT PROGRAM (FEMP) Best Practices Guide for Energy-Efficient Data Center Design**, <http://www1.eere.energy.gov/femp/pdfs/eedatacenterbestpractices.pdf>

2.10. **Energy Management Control System (EMCS)** – a centrally located system that allows an operator to view conditions within a facility based on data received from remote sensors. These sensors can relay a wide range of information such as room temperature, hot/chilled water temperatures, and equipment operation status. The operator is able to adjust set-points, operate valves, fans, or pumps to achieve the desired temperature.

3. Procedures to meet USAFE's AC Utilization Guidance: BCE's should develop an energy efficient approach to cooling and follow the steps below to accurately assess the number, types, and purposes of the AC systems operating on their respective installation. **(T-3)**

3.1. **Inventory all existing AC systems:** All USAFE installations will conduct a complete inventory of all existing AC systems (see Attachment 3 for the inventory format). The inventory should identify the facility number, facility function, user/occupant, type of AC unit, manufacturer, model number, serial number, rated capacity, electrical specifications, refrigerant type, refrigerant amount, purpose (comfort or equipment cooling), and any waiver status. **(T-3)**

3.2. **Shut-down, lock-out and remove unauthorized AC systems:** As AC systems are identified as unauthorized, they should be shut-down and electrically locked. This action should be annotated and tracked on the inventory sheet. Discontinuing the use of these systems will save annual utility dollars while ensuring time and funds are spent on authorized systems. As funding and time permits, these systems should be permanently removed from the facility. The BCE is required to notify the user that the AC system has been identified as unauthorized and will be removed unless the user can provide sufficient justification showing the system supports a mission essential function or is supported by some other regulation. During this period, components and/or refrigerant from these systems could be used to repair authorized systems as needed. NOTE: If special circumstances exist to where the user is

reasonably expected to receive an approved waiver, it may continue to operate IAW Para 3.4. The timeline for initial compliance with this publication is detailed in Para 9.2. (T-3)

3.2.1. Portable-type AC units are not authorized for permanent operation in USAFE facilities. The BCE has the authority to purchase or rent portable-type AC units for temporary use in emergency cooling applications. These units should only remain in operation until the emergency has been alleviated. Organizations are **not** authorized to procure and install portable AC units for use within their facilities. As these instances are identified, the BCE will provide a formal memo to the responsible Squadron Commander notifying him/her that the AC unit will be confiscated if not promptly removed. (T-3)

3.2.2. Individual organizations are not permitted to purchase any AC systems with their Government Purchase Cards without written approval from the BCE. AC systems that were purchased and/or installed by parties other than CE should be included in the installation AC inventory, and should be shut down/removed unless a waiver package is submitted and approved. In the event that CE determines an AC system provides unauthorized comfort cooling and the user refuses to allow the system to be shut down, the user will be responsible for submitting a full waiver package and obtaining approval. See section 7 for guidance on submitting a waiver. This should be documented appropriately on the annual AC equipment inventory. (T-3)

3.3. For AC systems that are authorized by a current UFC, TO, or other valid regulation: Identify the specific space that requires AC. A UFC that references a requirement for AC cannot be used to justify cooling for an entire building. Investigate alternative cooling methods and best practices that require less energy and still satisfy the temperature requirement. If alternative cooling methods can be implemented, provide a summary of the plans for implementation on the AC inventory. Document the UFC, TO or other valid regulation on the AC equipment inventory. (T-3)

3.4. For AC systems that are not authorized by any UFC, TO, or other valid regulation but special circumstances exist that may warrant AC: Investigate alternative cooling methods and best practices that require less energy and still satisfy the temperature requirement. Once all alternative cooling methods have been investigated and deemed unacceptable/unfeasible, prepare and submit an AC waiver package for review. See section 7 for guidance on submitting a waiver. (T-3) **NOTE:** In the interest of energy efficiency, all comfort cooling systems should maintain interior temperature set-points as defined below in Table 1. In addition all bases should observe a “cooling season” and “heating season”. All **authorized** comfort cooling systems should not be in operation until the outside air temperatures exceed 75 degrees Fahrenheit (24 degrees Celsius) dry bulb or 68 degrees Fahrenheit (20 degrees Celsius) wet bulb for five consecutive days. In addition the “heating season” should not begin until the outside temp drops below 55 degrees Fahrenheit (13 degrees Celsius) for five consecutive days. (T-3)

Table 1. Heating and Cooling Set-Point Temperatures

Type of Space	Heating Set-Points		Cooling Set-Points	
	Occupied Hours °C/°F	Unoccupied Hours °C/°F	Occupied Hours °C/°F	Unoccupied Hours °C/°F
Administrative *	20C / 68F	12.7C / 55F	24.4C / 78F	29.4C / 85F
Customer Service area*	20C / 68F	12.7C / 55F	24.4C / 78F	29.4C / 85F
Hallway/Vestibule*	18.3C / 65F	12.7C / 55F	24.4C / 78F	29.4C / 85F
Maintenance shop	18.3C / 65F	12.7C / 55F	Unconditioned	Unconditioned
Stairwell	12.7C / 55F	12.7C / 55F	Unconditioned	Unconditioned
Storage	12.7C / 55F	12.7C / 55F	Unconditioned	Unconditioned
Shower/Locker room	23.8C / 75F	12.7C / 55F	Unconditioned	Unconditioned
*Cooling is only authorized when in compliance with this instruction. (T-3)				

4. Ongoing management of the AC system inventory:

4.1. Prior to installing a new AC system in an existing facility, alternative cooling methods should be investigated and applied to the fullest extent possible. In addition, during major repair or replacement of an existing AC system, alternative methods to meet the conditioned air requirements should be researched and implemented if economically cost effective. (T-3)

4.2. In existing non-waivered facilities with a heat pump as the only source of heat, the cooling function should be disabled so the system will only function in heat mode. Operating the heat pump in cooling mode for the purpose of comfort cooling is **not** authorized without a formal waiver. (T-3)

4.3. If the function and/or user of a facility changes, the status of any existing waivers will be revoked until the need for cooling is assessed. Moving into a facility with an AC system installed does **not** automatically authorize the occupant the use of this system. Similarly, if a facility has an AC system that was originally installed for the purpose of equipment cooling and this equipment is moved or no longer utilized, the AC system becomes unauthorized. This area should not be converted into an administrative area with the intention of maintaining the AC system for comfort cooling. The system should be shut-down, electrically locked, and scheduled for removal IAW Para 3.2. (T-3)

4.4. During the initial or any following equipment inventories, if an AC system is identified as unauthorized and is also inoperative; this status should be annotated on the inventory to ensure that no further time or funds are allocated for repair or maintenance. In addition, if an HVAC technician responds to a service call for an inoperative AC system and it is determined that the system is unauthorized, the technician need not continue with the repair. The fact that funds have been spent on the initial installation is not a valid reason to continue with the repair. Once a system is identified as unauthorized, it should be shut-down and electrically locked. The BCE is required to notify the user that the AC system has been identified as unauthorized and therefore will not be repaired and will be removed as time and funding allows unless the user can provide sufficient justification showing the system supports a mission essential function or is supported by some other regulation. (T-3)

4.5. In the event that the facility occupant refuses to allow the system to be shut down, and this issue cannot be resolved through normal chain of command channels, the user will be

responsible for submitting a full waiver package and obtaining approval. See section 7 for guidance on submitting a waiver. This should be documented appropriately in the annual AC equipment inventory. NOTE: If special circumstances exist to where the user is reasonably expected to receive an approved waiver, the system may continue to operate IAW Para 3.4. Waiver approvals will be in accordance with this instruction and the guidelines set forth, not past actions or agreements. **There is no grandfather clause. (T-3)**

4.6. Once a waiver package is approved, it will remain current until a change in the facility function or user. A new waiver package will not be required each year. However, the annual AC equipment inventory and waiver data call should reference the approved waiver. **(T-3)**

4.7. In the event organizations bypass the established work request approval process and hire a contractor to install an AC system within their facility, the BCE has the authority to determine if CES will assume responsibilities for maintenance and repairs. In addition, if this system is determined to be unauthorized, it should be shut-down and electrically locked. The using organization will be responsible for submitting a waiver package if they wish to pursue keeping the system operational. See section 7 for guidance on submitting a waiver. The user will also be responsible for funding the removal of the AC system if the waiver is disapproved. However, if the system is for an authorized purpose, the BCE should follow current established procedures for instances of this nature in determining responsibilities for maintenance and repair. No waiver request is needed if the AC system is for an authorized purpose. **(T-3)**

4.8. All new facilities on USAFE installations should incorporate construction methods to reduce or eliminate the need for AC. This includes proactive designs that reduce facility heat gain in the summer and heat loss in the winter. Design criteria used in new construction should be in line with UFC 1-200-02; *High Performance and Sustainable Building Requirements* and the *Air Force Sustainable Facilities Guide* to the maximum extent possible. In cases where the Host Nation has applicable energy codes/requirements, adhere to the most stringent standards. Waivers for the use of AC should be submitted for review prior to 35% of design completion. **(T-3)**

5. Compliance: All USAFE Civil Engineer units should utilize this instruction as the primary guide in determining AC eligibility. Installation BCEs, CES Engineering and Operations Flight, and Contracting personnel should also consult the latest version of any DoD Unified Facilities Criteria (UFC) documents to evaluate AC cooling requirements based on the function of the facility. The UFC will **not** be considered as stand-alone justification for use of AC, but should be used to help understand the requirements for each type of facility. Facility specific UFC design guides that reference a requirement for AC does not provide a blanket authorization for AC in the entire facility. In addition, the most energy-efficient and cost effective means, including alternative cooling methods, of satisfying the temperature, humidity, and ventilation requirements should always be considered first. **(T-3)**

6. Responsibilities

6.1. **Facility Managers:** All AC installation requests should be submitted to CE Customer Service by the appointed facility manager using the AF Form 332, *Base Civil Engineer Work Order Request*. **(T-3)**

6.1.1. All requests will be accompanied by a full justification of the requirement to allow the BCE to fully understand the function of the facility and the mission impact if the request is not approved. If the request is related to provide cooling to a specific piece of equipment, provide a copy of the technical specifications that identifies the acceptable temperature and humidity operating range. **(T-3)**

6.2. Civil Engineer Squadron: CE Customer Service is the focal point for receiving the work request from the facility manager and preparing the work order package for review; ensuring all pertinent documentation and justification is provided. The CE Operations Flight conducts the initial review to determine the validity of the request and will be the OPR for the AC system waiver program. The HVAC shop conducts the inventory assessment and provides any updates concerning facility function and the need for submitting/cancelling any waivers to Operations Flight leadership. If the AC installation request is approved, and based on the scope, the package is forwarded to the Engineering Flight; the BCE will determine which flight is responsible for staffing any waiver requests. **(T-3)**

6.2.1. If a waiver is approved by HQ USAFE/A4/7D, the BCE may proceed with the normal processing of the request for execution. The approved request may contain stipulations on the installation and energy management of the system. Variances will be staffed back up to HQ USAFE Energy/Mechanical Engineer for review and approval. **(T-3)**

6.2.2. Civil Engineer Squadrons should use the AC inventory ([Attachment 3](#)) to track the status of all submitted, pending, and approved waiver packages; along with all other systems that are under evaluation. The full inventory will be submitted to HQ USAFE/A7NO by 1 September each year. **(T-3)**

6.3. HQ USAFE/A7NO Staff: The HQ USAFE Energy/Mechanical Engineer and HVAC/R Program Manager are the focal points for clarifying questions in regards to AC eligibility, waiver package review status, and waiver routing procedures. The staff is responsible for disseminating “Best Practices” and information across USAFE installations to standardize and continually improve processes. The staff will assess compliance with this instruction during scheduled SUPER visits. **(T-3)**

7. Waiver Packages: Waiver packages to install or continue using AC systems for comfort cooling must be approved by the USAFE Civil Engineer, HQ USAFE/A4/7D. An AC system that is solely used to provide cooling for equipment does **not** require a waiver. **(T-3)**

7.1. Waiver Package Routing

7.1.1. All waiver packages must be reviewed by the Command Mechanical Engineer and HVAC/R Program Manager in HQ USAFE/A7NO. After review, the request, along with the A7NO assessment and recommendations, will be forwarded to HQ USAFE/A7N for a final review and recommendation decision prior to being submitted to HQ USAFE A4/7D for approval/disapproval. During this process, the BCE or a delegated Point of Contact may need to provide supplemental information to support the request. **(T-3)**

7.1.2. HQ USAFE/A7N will send an official memorandum to the BCE concerning the approval or disapproval of the waiver package. An approved waiver may include conditions on the system to include secured temperature controls to limit user access, minimum/maximum temperature settings, and night setback. These conditions are required

for the use of the AC system and will be subject to verification by HQ USAFE/A7NO staff during SUPER visits. (T-3)

7.2. Steps to submit a Waiver Package: To provide the required information and to reduce any unnecessary work, the waiver process is broken down into two steps; initial validation and then final validation and approval. (T-3)

7.2.1. **Step 1 - Initial Validation:** Step 1 will be used to quickly determine if the facility or space meets the eligibility requirements for AC prior to obligating additional manpower or funds. The information below should be submitted to HQ USAFE/A7NO for the initial validation review. (T-3)

7.2.1.1. **Function of the Facility/Mission Impact Statement:** Provide an E-SSS explaining the function of the facility or space to justify the need for AC and the mission impact if not approved. Also include a recommendation from the BCE as to approve or disapprove this request. (T-3)

7.2.1.2. **Load calculations:** Complete a load calculation accounting for the total square footage of the area needing cooling, number of people that would normally occupy the space, and all electronic equipment that generates heat. A load calculation template can be provided from HQ USAFE/A7NO upon request. (T-3)

7.2.1.3. **Floor plan:** Include a comprehensive floor plan of the area needing cooling that clearly identifies any doorways or windows. Also identify if there are any existing AC or ventilation systems. (T-3)

7.2.2. **Step 2 - Final Validation and Approval:** If after the completion of Step 1, HQ USAFE/A7NO determines the facility or space meets the initial eligibility requirements for AC; additional information will be required to complete Step 2 for final validation and approval. (T-3)

7.2.2.1. **Proposed AC System Information:** Provide the specifications on the type, size, and type of controls of the proposed AC system. Include the reasoning of why this is the best solution for the application. (T-3)

7.2.2.2. **Comparison of Alternative Cooling Methods:** Provide a comparison of alternative cooling methods and explain why these methods will not fulfill the requirement. Identify if alternative cooling methods will be used in conjunction to reduce the overall heat load. (T-3)

7.2.2.3. **Lifecycle Cost Analysis:** Complete a full lifecycle cost analysis with estimated installation, operating, and maintenance costs over the expected "life" of the system. (T-3)

8. Recommendations for All Approved "Comfort Cooling" AC Systems:

8.1. **Programmable thermostatic controls:** Systems should utilize a thermostatic control that allows for the programming of night/weekend setback. The control should also have locked setpoints or placed within a lockable thermostat cover in situations that facility occupants should not have access to adjust the settings. The thermostatic control should be capable of communicating with an Energy Management Control System (EMCS). (T-3)

8.2. **Occupancy sensors:** Place occupancy sensors in rooms that may be unoccupied for extended periods of time to shut down the mechanical cooling components of the AC system after a predetermined time. The fan may continue to run for air circulation and ventilation purposes. (T-3)

8.3. **Metering:** Meter facilities with AC systems of 10 tons (35 kW) or larger using an advanced electrical meter. (T-3)

9. Reporting Requirements and Compliance Checks:

9.1. **Initial AC Inventory:** Create and maintain a list of facilities with AC systems within 120 days of this instruction's implementation date and send to HQ USAFE/A7NO upon completion, and by 1 September each year thereafter. See Attachment 3 for the required format. Include the following: (T-3)

- 9.1.1. Facility Number
- 9.1.2. Facility Function
- 9.1.3. Facility User/Occupant
- 9.1.4. General Description of AC System (type of AC unit)
- 9.1.5. Hertz
- 9.1.6. Phase
- 9.1.7. Amps
- 9.1.8. KW
- 9.1.9. Refrigerant Type
- 9.1.10. Refrigerant Amount (either kg or lbs is acceptable)
- 9.1.11. Purpose of AC System (comfort or equipment)
- 9.1.12. Waiver Status (if applicable)

9.2. **Initial Compliance Requirement:** Develop a program to ensure all systems are in compliance with this instruction within 36 months of implementation. (T-3)

9.3. **Compliance Checks:** HQ USAFE/A7NO will review the accuracy of the equipment inventory along with any waivers and other documentation during SUPER facility assessments. In addition, a line item related to the compliance of this instruction will be added to the Management Internal Control Toolset (MICT) Self-Inspection checklist for units to track their own status. (T-3)

9.4. Annual AC Inventory & Waiver Data Call: Installation BCEs must submit an updated AC inventory to HQ USAFE/A7NO by 1 September each year. The status of any waivers should be annotated on this inventory to accurately reflect those systems that have been approved for continued operation. **(T-3)**

STEPHEN E. SHEA, Col, HQ USAFE
The USAFE Civil Engineer

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

UFC 3-410-01, *Heating, Ventilating, and Air Conditioning Systems*, (07-01-2013)
UFC 1-200-02, *High Performance and Sustainable Building Requirements* (3-01-2013)
UFC 3-400-02, *Design: Engineering Weather Data* (02-28-2003)
UFC 3-401-01FA, *Utility Monitoring and Control Systems* (03-01-2005)
UFC 3-410-02, *Lonworks Direct Digital Control for HVAC and Other Building Systems, Change 1* (7-01-2013)
UFC 3-410-04N, *Industrial Ventilation* (10-25-2004)
UFC 3-430-01FA, *Heating and Cooling Distribution Systems* (07-25-2003)
MIL-HDBK-1190, *Facility Planning and Design Guide*
Global Climatology Branch Data; link: <https://notus2.afccc.af.mil>

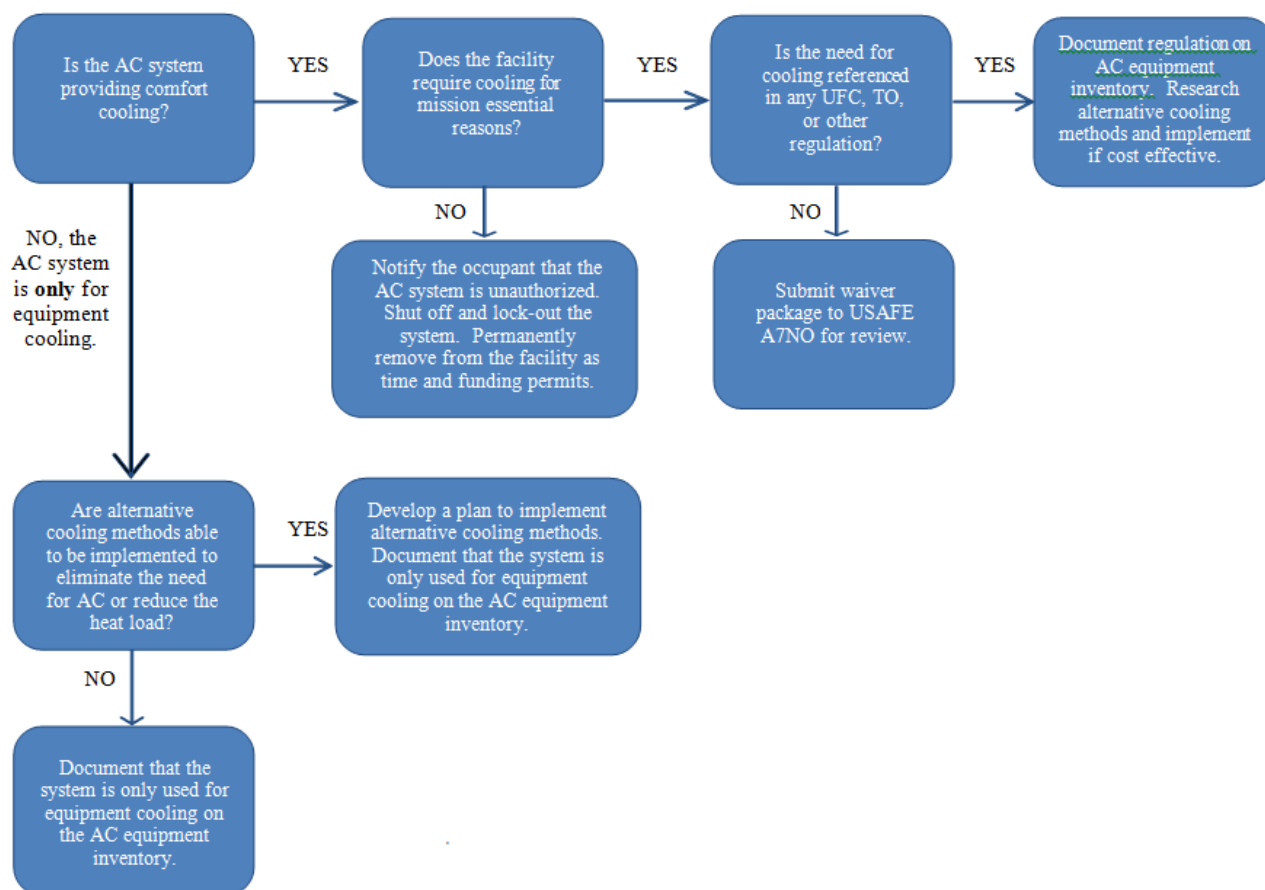
Acronyms

AC—Air Conditioning
BCE—Base Civil Engineer
CES—Civil Engineer Squadron
EMCS—Energy Management Control System
E-SSS—Electronic Staff Summary Sheet
HVAC—Heating, Ventilation, and Air Conditioning
IAW—In Accordance With
kW—Kilowatt
MICT—Management Internal Control Toolset
OPR—Office of Primary Responsibility
SUPER—Structures, Utilities & Pavements Evaluation Report
Tdb—Temperature (Dry Bulb)
TMC—Traditional Mechanical Cooling
TO—Technical Order
Twb—Temperature (Wet Bulb)
UFC—Unified Facilities Criteria
USAFE—United States Air Force Europe

Attachment 2

AC WAIVER PROCESS FLOW CHART

Figure A2.1. Waiver Flow Chart.



Attachment 3

EXAMPLE FORMAT FOR AC EQUIPMENT INVENTORY

Table A3.1. AC Equipment Inventory Example.

<u>Facility #</u>	<u>Facility Function</u>	<u>User/Occupant</u>	<u>General Description of AC System</u>	<u>AC Unit Manufacturer</u>	<u>AC Model #</u>	<u>AC Serial #</u>	<u>Capacity (kW)</u>	<u>Capacity (Tons)</u>	<u>Voltage</u>	<u>Hertz</u>	<u>Phase</u>	<u>Amps</u>	<u>KW</u>	<u>Refrigerant Type</u>	<u>Refrig Amount (Kg)</u>	<u>Refrig Amount (lbs)</u>	<u>Purpose: Comfort / Equipment</u>	<u>Wavier Status</u>
30	Tech Control	422 CS	Split A/C	Mitsubishi	PUZR71A3	8ZU03078	8.1	2.3	230	50	1	19	3.7	R410A	3.5	7.7	Equipment	N/A
92	Club	422 ABS	Package A/C	Airedale	RMHP20D	US1632010	70.2	20	400	50	3	120	70.6	R407C	20	44	Comfort	Pending

Attachment 4

FACILITY FUNCTION AND CORRESPONDING TEMPERATURE REQUIREMENTS FOR AC

Table A4.1. Facility Function/Temperature Requirements.

Facility Function	Temperature Requirement for AC
Administrative	Dry bulb >80 degrees F (27 degrees C) for more than 350 hours per year -OR- wet bulb temperature >67 degrees F (19 degrees C) for more than 500 hours per year
Dining Facilities, Schools (classrooms), Child Development Centers	Dry bulb >80 degrees F (27 degrees C) for more than 350 hours per year -OR- wet bulb temperature >67 degrees F (19 degrees C) for more than 500 hours per year
Dormitories, Lodging, Military Family Housing, Auditoriums, Theaters, Banks, Bowling Alleys, Chapels, Libraries, Exchanges, Clubs, Post Office, Schools (other than classrooms)	Dry bulb >80 degrees F (27 degrees C) for more than 650 hours per year -OR- wet bulb temperature >67 degrees F (19 degrees C) for more than 800 hours per year
Fitness Centers	Dry bulb >93 degrees F (34 degrees C) for more than 1300 hours per year -AND- wet bulb temperature >73 degrees F (23 degrees C) for over 800 hours; -OR- wet bulb exceeds >73 degrees F (23 degrees C) for over 4,000 hours per year
Temperature Sensitive Computer or Electronic Equipment	Provide cooling only to the specific area containing electronic equipment to meet the required temperature and humidity levels
Motor Vehicle Maintenance Bays, Aircraft Maintenance Hangars, Industrial Facilities such as Boiler or Water Treatment Plants	AC not recommended
Toilets, Lockers, Utility Closets	Maintain these areas at a negative pressure through fresh air ventilation and exhaust

Attachment 5

COMMAND ENGINEERING WEATHER DATA BY INSTALLATION

Table A5.1. Weather Data.

Installation	Hours (Tdb > 93° F)	Hours (Tdb > 80° F)	Hours (Twb > 73° F)	Hours (Twb > 67° F)	Historical Temperature Data (Hours are Yearly Averages)	
					Hours	Temp Range °F
Incirlik AB	186	1730	1235	2538	777	80-84
					487	85-89
					405	90-94
					88	95-99
					15	100-104
					1	105-109
Moron AB	354	1446	155	1181	479	80-84
					316	85-89
					301	90-94
					163	95-99
					56	100-104
					10	105-109
Aviano AB	9	469	171	932	316	80-84
					88	85-89
					40	90-94
					3	95-99
Lajes Field	0	45	48	1088	46	80-84
					0	> 84
Ramstein AB	7	160	6	130	111	80-84
					31	85-89
					13	90-94
					4	95-99
Spangdahlem AB	1	86	3	73	67	80-84
					13	85-89
					4	90-94
RAF Lakenheath	0	51	0	40	40	80-84
					7	85-89
					2	90-94
RAF Mildenhall	1	46	1	54	36	80-84
					7	85-89
					2	90-94
RAF Fairford	0	37	1	44	27	80-84
					5	85-89

Attachment 6

AC AUTHORIZATION BY INSTALLATION

Table A6.1. AC Authorization.

Installation	Administrative	Dining Facilities, Schools (classrooms), Child Development Centers	Dormitories, Lodging, Military Family Housing, Auditoriums, Theaters, Banks, Bowling Alleys, Chapels, Libraries, Exchanges, Clubs, Post Office, Schools (other than classrooms)	Fitness Centers	Temperature Sensitive Computer or Electronic Equipment	Remarks
<u>Incirlik AB</u>	Yes	Yes	Yes	No	Yes – When supported by equipment specifications	
<u>Moron AB</u>	Yes	Yes	Yes	No	Yes – When supported by equipment specifications	
<u>Aviano AB</u>	Yes	Yes	Yes	No	Yes – When supported by equipment specifications	
<u>Lajes Field</u>	Yes	Yes	Yes	No	Yes – When supported by equipment specifications	
<u>Ramstein AB</u>	No	No	No	No	Yes – When supported by equipment specifications	Not authorized AC for comfort cooling
<u>Spangdahlem AB</u>	No	No	No	No	Yes – When supported by equipment specifications	Not authorized AC for comfort cooling
<u>RAF Lakenheath</u>	No	No	No	No	Yes – When supported by equipment specifications	Not authorized AC for comfort cooling
<u>RAF Mildenhall</u>	No	No	No	No	Yes – When supported by equipment specifications	Not authorized AC for comfort cooling
<u>RAF Fairford</u>	No	No	No	No	Yes – When supported by equipment specifications	Not authorized AC for comfort cooling